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Non-Lethal Weapons and Evolving Fundamentals of 21st Century Warfare

By

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A paper submitted to the faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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(17 May 2005)

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Abstract

In complex contingency operations of the twenty-first century, the battlespace is riddled with mission ambiguity, extreme conditions, and determined enemies deeply embedded within the local population. To help guide soldiers through today's multi-faceted mission areas, the joint staff has introduced emerging fundamentals of warfare which include: end state, safeguarding the force, understanding, adaptability, and legitimacy. Non-lethal weapons are other vital tools available to the modern soldier, and bring with them a unique ability to bridge the distinct gap along the force application continuum. This research will demonstrate how selected "Evolving Fundamentals of 21st Century Joint Warfare and Crisis Resolution" apply exceedingly well to today's complex battlespace, how these fundamentals enable the operational-level employment of non-lethal weapons, and that lethal and non-lethal weapons, when used in a well planned and synchronized fashion, represent an essential tool in the operational commander's toolbox.

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A NEW ERA OF WARFARE

We live in a time of unconventional challenges and strategic uncertainty. We are confronting fundamentally different challenges from those faced by the American defense establishment in the cold war or previous eras. . . . Our intent is to create favorable security conditions around the world and to continue to transform how we think about security, formulate strategic objectives, and adapt to achieve success. . . . Since the QDR was released, events have confirmed the importance of assuring allies and friends, dissuading potential adversaries, deterring aggression and coercion, and defeating adversaries. The war on terrorism has exposed new challenges, but also unprecedented strategic opportunities to . . . create conditions favorable to a secure international order. [Donald H. Rumsfeld, *2005 National Defense Strategy*]

To anyone watching CNN or FOX News in the early twenty-first century, the fact that U.S. forces are waging a different type of war is very apparent. The characteristics of forces, the enemy, and the battlefield on which they fight have evolved into a plethora of “grey areas” and ambiguity. In past eras, “traditional wars” were fought on the conventional battlefield--usually one major force or state against another major force or state. The forces involved were largely conventional combatants with predominantly conventional and extremely lethal weapons used to kill or destroy their targets.¹

Today, U.S. forces are faced with an entirely new form of warfare, against forces which are thoroughly unconventional and nearly invisible. More importantly, U.S. forces are increasingly engaged in combating ethnic unrest in failed or failing states, and usually against a capable insurgent force.² Even more complex mission areas with similar degrees of danger to intervening forces are “low-end” of the spectrum conflicts, which include activities such as: force protection, local security, protection of food and aid, riot and crowd control, and control of belligerents.³ Other mission areas, described in U.S. Joint Pub 3.07 as Military Operations Other Than War (MOOTW), focus primarily on deterring, delaying, or preventing escalation to war, and if able, promote nonviolent solutions to conflicts. These missions include, but are not limited to: humanitarian assistance, military support to civilian

authorities, disaster relief, peace operations, anti-drug, and noncombatant evacuation operations (NEO).⁴ What makes these evolving mission areas so complex and dangerous is that they all involve, to some degree, combatants that include imbedded militia, insurgents, criminals, state and non-state actors, and terrorists, all of whom readily blend in with the local population, making it difficult, if not impossible, to differentiate between combatants and non-combatants.⁵

To help guide the soldier in the field, there is doctrine. The current doctrinal framework concerning modern conventional warfare can be found in the “Principles of War,” which are listed in Joint Pub 3.0, and include: objective, offensive, mass, economy of force, maneuver, unity of command, security, surprise, and simplicity.⁶ Additionally, the joint staff has delineated a set of six principles that apply directly to MOOTW, which include: objective, restraint, unity of effort, security, perseverance, and legitimacy.⁷ The question remains, how well do these traditional principles apply to the battlefields of the twenty-first century? To help address the question of applicability and adaptability to future operations, the joint staff has further developed a new list of “Evolving Fundamentals of 21st Century Joint Warfare and Crisis Resolution.”⁸ These fundamentals include: end state, initiative, application of combat power, joint maneuver, tempo, unity of effort, safeguarding the force, shock, understanding, will, legitimacy, sustainability, and adaptability.⁹

According to *Joint Vision 2020*, the goal of any force is to achieve and maintain “full spectrum dominance” in any mission area, against any foe, at any time, and using all weapons and capabilities at its disposal.¹⁰ It is perfectly clear that U.S. forces have a clear advantage in lethal weapon technology, stockpiles, and training, however, commanders sometimes must have alternatives to kinetic solutions, and non-lethal weapons (NLWs)

offer some unique capabilities. Categories of NLWs will be discussed later, but for the purpose of introduction, Department of Defense (DoD) Directive 3000.3 defines non-lethal weapons as:

Non-Lethal Weapons. Weapons that are explicitly designed and primarily employed so as to incapacitate personnel or materiel, while minimizing fatalities, permanent injury to personnel, and undesired damage to property and the environment. . . . Unlike conventional lethal weapons that destroy their targets principally through blast, penetration and fragmentation, non-lethal weapons employ means other than gross physical destruction to prevent the target from functioning.¹¹

The principle goal of this research is to analyze how selected “Evolving Fundamentals of 21st Century Joint Warfare and Crisis Resolution” can enable the operational level employment of non-lethal weapons, and to further illustrate how lethal and non-lethal weapons, when used in a synchronized manner, are extremely effective tools in the operational commanders arsenal. Finally, in an effort to narrow the scope of this research, two assumptions have been made. First, that U.S. forces are and will continue to employ non-lethal weapons in a manner consistent with the Laws of Armed Conflict. Second, as mentioned previously, the thirteen fundamentals of joint warfare apply to a wide variety of scenarios. This research will focus on the five fundamentals that most readily lend themselves to the incorporation and integration of NLWs, which include end state, safeguarding the forces, understanding, adaptability, and legitimacy.

TOOLS IN THE TOOLBOX

Smoke has been used on the battlefield for over two thousand years. The trumpets blew at Jericho. The Soviet Army used searchlights to blind German tankers. The United States employed tear gas and defoliants in Vietnam. The United States used rock music to “blast” Noriega from the Vatican Embassy in Panama. The [Gulf War] coalition bombed the Iraqi army with leaflets. [Sam Gardiner, *The Nonlethal Revolution in Warfare: Maybe Not Such a Revolution*]

Armies have employed non-lethal weapons against their enemies for centuries, and surprisingly, the basic properties of these weapons and methods of employment have not changed for most of that time. Non-lethal weapons, more accurately described as “less-than-lethal,” “disabling,” “soft-kill,” or “pre-lethal,” exist in three major categories: counter personnel, counter material, and counter system.

Counter Personnel: This category is the largest and for obvious reasons, one of the most controversial. Most widely used are the kinetic weapons, such as plastic bullets, beanbag rounds and baton rounds which knock down or knock out a target through blunt force impact. Lasers, pulsing light, and isotropic radiators act to temporarily blind or disorientate a target. Acoustic weapons seek to incapacitate a target through disorientation or causing physical illness, such as nausea and vomiting. Finally, a member of the chemical family, calmativ agents incapacitate a target by literally putting them to sleep.¹²

Counter material: The weapons within this category strive to weaken or destroy the function or structure of the target material. Conductive particles, such as carbon, short out electrical grids. Liquid metal embrittlement, depolymerizing, and supercaustic agents attack the strength and molecular make-up of a target material. Superlubricants and sticky foam attack the mobility of a person, vehicle, or system.¹³ Finally, there are barrier containment systems such as nets, caltrops, and spiked road barriers, which act to impede or disable mobile threats.¹⁴

Counter system or counter capability: Already a veteran of multiple conflicts, destructive code or viruses imbedded into an enemy computer network can effectively shut the system down.¹⁵ Psychological warfare, which is a major portion of Information Warfare (IW),

attacks the populace via the existing information dissemination infrastructure such as T.V. and radio in an effort to pass false information and propaganda to the target audience.¹⁶

CAPABILITIES

To capture the enemy's army is better than to destroy it; to take intact a battalion, a company or a five-man squad is better than to destroy them. [Sun Tzu, *The Art of War*]

NLWs possess many attractive capabilities for the Operational Commander. They have the capacity to confuse, deter, detain, and operationally paralyze a target without destroying it.¹⁷ More importantly, they fill a critical gap in the “force continuum” where, armed with only a lethal weapon, a soldier has only the two choices of “fire” or “not fire.” Non-lethal weapons provide a much needed option to apply enough non-lethal force to deter the enemy, while preserving the capacity to apply stronger non-lethal or lethal measures if required.¹⁸ NLWs can also be used in early stages of a conflict as Flexible Deterrent Options, acting as a critical enabler in delaying the intensification of violence and possibly providing a window for a diplomatic and peaceful solution.¹⁹ Moreover, when considering Phase IV Operations, physical collateral damage is greatly reduced, thereby decreasing the cost and effort of the rebuilding process. Finally, in today's information age of embedded reporting, there exists the capability to show that NLWs can lead to fewer fatalities, including fratricide, and decreased levels of destruction. More often today, U.S. foreign policy is shaped by public image and more importantly, public support. With this in mind, a pronounced lack of images featuring dead bodies and general carnage can only help raise the United States to higher “moral grounds” in the eyes of public opinion.²⁰

LIMITATIONS

Kind-hearted people might of course think there was some ingenious way to disarm and defeat an enemy without too much bloodshed, . . . Pleasant as it sounds, it is a fallacy that must be exposed: war is such a dangerous business that mistakes that come from kindness are the very worst. [Carl Von Clausewitz, *On War*]

With all the endearing qualities and substantial application of NLWs, it is crucial to acknowledge their inherent weaknesses—principally that they do not represent a stand-alone solution, and more importantly, often have unintended or lethal consequences. In Northern Ireland, British Forces experienced lethal consequences in 1 in 6,500 plastic bullets fired.²¹ More recently, in October 2002, Russian forces inadvertently killed over 100 hostages being held by Chechen terrorists when they used a calumet agent in an attempt to incapacitate both captors and hostages. Ron Madrid, a Pennsylvania State University researcher explained “It’s one of those stark or definitive examples that nonlethal weapons are not a panacea. . . . It’s not the silver bullet some people think it is.”²² What’s more, lasers can permanently blind a human target, and sticky foam, if inhaled, can choke a victim. In addition, some believe the time, effort, and expense required to effectively incorporate NLWs into a tactical or operational scenario is not worthwhile, will weaken the public’s perception of overwhelming U.S. fighting power, and often needlessly endanger friendly forces.²³ Finally, there is the ever-present controversy over the legality of NLWs, especially chemical and riot control agents.²⁴

DOCTRINE

Military doctrine presents fundamental principles that guide the employment of forces. . . . It incorporates time-tested principles for successful military action as well as contemporary lessons . . . Doctrine shapes the way the Armed forces think about the use of the military instrument of national power. [Chairman Joint Chiefs of Staff, *Joint Doctrine Capstone and Keystone Primer*]

The use of NLW really came in vogue in 1995 during Operation UNITED SHIELD. During that operation, marines under the command of Lieutenant General Anthony Zinni used NLWs to help control looting and rioting, and to cover the eventual withdrawal of 2,500 United Nations peacekeepers.²⁵ In 1997, the Department of Defense (DoD) published Directive 3000.3, which delineated initial doctrine for the use of NLWs and established the Joint Nonlethal Weapons Directorate, with the Commandant of the Marine Corps as the Executive Agent. DoD Directive 3000.3 was the first attempt to promulgate a clear and concise description of mission statement and policy pertaining to the employment of NLWs and states: “Non-lethal weapons, doctrine, and concepts of operation shall be designed to reinforce deterrence and expand the range of options available to commanders.”²⁶ Furthermore, it is DoD Directive 3000.3 policy that NLWs can be used to effectively dissuade the enemy, delay or avert increased violence, and limit collateral damage. Finally, DoD has taken steps to protect the soldiers using NLWs in that DoD Directive 3000.3 does not require NLWs to produce 100 percent non-lethal consequences, or even require their use if it is obvious NLWs will be unable to achieve the desired effect.²⁷

Another source of angst for military planners is the ongoing evolution of Rules of Engagement (ROE) and its inclusion of NLWs. The major source of this concern surrounds the fact that in lower-end contingency operations, there has been a capability-driven gap in the force continuum required to successfully complete a mission. This gap was very apparent during the early stages of Operation UNITED SHIELD in Somalia, where belligerents were literally stealing equipment and personal items from the soldiers. Standing between a mugging and the soldier’s safety was his lethal M-16 and ROE

preventing any action. ROE, to be effective, must be simple and easy to apply in any given situation.²⁸ The overarching principle in current ROE is one of a common sense progression along the continuum of force, where lethal force is used only if non-lethal force cannot be effectively utilized within acceptable hazard levels. That being said, if there is a reason to believe non-lethal means will be ineffective or will endanger friendly forces, lethal means can be legitimately employed. In the end, it seems that NLWs, used flexibly and in concert with lethal weapons, are able to fill the gap along the spectrum of violence and force required for mission accomplishment.²⁹

EVOLVING FUNDAMENTALS OF TWENTY-FIRST CENTURY WARFARE

History reveals that the principles of war have frequently been subject of long and often inspired debate; their character, number, and definition have changed repeatedly. They took their present form in US Army doctrine only 49 years ago. . . . One may legitimately ask whether the principles as they stand today could meet the needs of U.S. armed forces half a century from now. [Russell Glenn, “No More Principles of War”]

As stated earlier, the very characteristics of armed conflict in the twenty-first century, along with mission complexity and ambiguity, are changing the way we think of warfare. Furthermore, it is abundantly clear that to remain superior war fighters, it is important to constantly re-examine and validate our approach to warfare and our principles of war. When analyzing these new conflict characteristics and applying them to our current fighting force, one can argue that the joint staff’s set of evolving fundamentals apply exceedingly well to twenty-first century warfare and conflict resolution and have deeply intertwined cause and effect relationships.³⁰

Objective becomes End State: Any student of joint military operations can tell you that the most important and yet most often-overlooked step in operational and strategic planning is the establishment and promulgation of a desired end state. Considering the complexity of

contingency operations and lower-end spectrum warfare, end state must pertain to all facets of post conflict objectives, such as physical condition of utilities and infrastructure, political aftermath, economic stability, and human casualties, both militant and civilian. Finally, in the information age of instant reporting, the public is well informed and has a very long memory. A less-contentious end state will do wonders for public image, which is critical to maintaining public support and, ultimately, legitimacy of the force and its mission.³¹

Security becomes Safeguarding the Forces: Safeguarding the force, or “force protection,” in simplest terms, means effectively and efficiently using all means--technology, weapons, and information available--to provide a secure and protected environment for friendly forces against exploitation or enemy attack. Force protection incorporates efforts on multiple fronts, including: information, site, intelligence, and logistics security. Safeguarding the force is a complex undertaking across the full spectrum of warfare, but is made more so in lower-end conflicts and crisis resolution of the twenty-first century. This complexity stems from the lack of a clearly defined enemy and an environment in which friendly civilians, terrorists and belligerents blend together seamlessly. Moreover, this blending of friends, enemies, and non-belligerents requires tremendous flexibility from friendly forces pertaining to force application as they adapt to an ever-present and ever-changing threat.³²

Agility becomes Adaptability: Whereas agility applies to mobility and speed of movement, adaptability applies to the ability to transition quickly from one mission type to another. In the current era of complex contingency operations, it is critical that forces remain flexible in their capacity to adapt to rapidly changing missions, confusing ROE, often ambiguous objectives, and a wide variety of fighting conditions. This flexibility also includes the

ability of the operational-level commander to adequately shift and scale his combat firepower along the ever-changing spectrum of force required or desired to accomplish his mission.³³

Simplicity becomes Understanding: Understanding, one can argue, applies to twenty-first century warfare and crisis resolution in two very distinct ways. First, there is the absolute requirement for the operational commander and his forces to understand the characteristics and complexities of their current operational environment. They must also understand how the characteristics of their battlespace can change with time and mission requirements, and how to adapt to these changes. They must have complete understanding of whom and what the enemy is, along with its strengths and weaknesses. Likewise, they must understand who their friends are, and in the case of complex contingency operations, can they distinguish friends from foe? Additionally, one's forces must have a clear understanding of the mission requirements, operational objectives and desired end state.³⁴ The second and equally important aspect of understanding is the effort and ability to make both friends and enemy comprehend the absolute power of U.S. forces and their capacity to apply varied levels of lethality along the full range of military operations. By making the "customer" aware of these unique capabilities, the use of lethal and non-lethal weapons pays increased dividends in lower-end conflicts and complex contingencies. In the end, these dividends manifest themselves as fewer casualties, less destruction, and, arguably, a less-contentious end state.

Legitimacy : Often called the "10th Principle of War,"³⁵ legitimacy is perhaps the operational commander's most critical evolving fundamental. It is also the most elusive and perishable of the fundamentals, especially in the information age of instantaneous

combat reporting and worldwide live coverage. An operational commander achieves and maintains legitimacy by successfully completing a necessary and just mission, in accordance with the Laws of Armed Conflict, and with a general concern for the welfare of his forces, non-combatants, and prisoners of war. Again, key enablers to legitimacy are public perception and support for operations, especially in the complex contingency operations and MOOTW of the twenty-first century. It is important that soldiers involved in these conflicts, particularly when confronted with uncertain objectives and an ambiguous enemy, maintain the highest standards of conduct.³⁶

ANALYSIS OF OPERATION APPROPRIATE FORCE: SOMALIA 2009

In this future scenario, U.S. forces are deployed to Somalia in an effort to restore order after a recent unsuccessful coup against the U.S.-supported government. Additionally, U.S. forces are charged with the protection of relief workers providing food and water after a horrific drought that persisted for over three years. The National Security Council has established the following objectives: restore civil order, protect the legitimate government, minimize casualties and damage to existing infrastructure, and allow open access to the media to the fullest extent possible. The world is watching Operation APPROPRIATE FORCE with intense interest and has vivid memories of the unmitigated disaster that took place in 1995 during Operation UNITED SHIELD. Although fictional in nature, this speculative scenario is an accurate example of likely twenty-first century warfare and a situation that will challenge an operational commander to adopt emerging fundamentals of warfare while effectively employing non-lethal weapons.

End State: Applying non-lethal weapons raises significant implications pertaining to the desired end state, such as; NLWs have little negative effect on the economic infrastructure,

including banking, commerce and local markets. Consequently, a solid economic footing and uninterrupted commerce will help stabilize the currency and may have a calming effect on the population. Concerning Phase IV Operations, using non-impact weapons will greatly reduce the effort and cost of rebuilding already dilapidated utility systems including: electricity, sewer, and the critical supply of potable water. Again, maintaining access to reliable utilities may give the population less reason to protest, loot, or riot. On the political front, the United States, by using NLWs and thus avoiding unnecessary violence and casualties, can deny its opponents significant support for arguments against intervention in Somalia. Lastly, in today's social and political climates, an end state without a body count is particularly attractive, can help shore up public backing of the mission, and in time, may provide a crucial pillar of support to mission legitimacy.

Understanding: The operational commander's effective use of understanding to augment the use of NLWs is vital in avoiding unnecessary lethal consequences while maneuvering through the many facets of complex contingency operations. First and foremost, the operational commander has a clear set of objectives, a realistic and attainable end state, and understandable and concise ROE that includes a scalable response using NLWs. Secondly, having been bombarded by non-lethal IW, the public is acutely aware of the overall mission objectives of Operation APPROPRIATE FORCE, its peaceful nature, and the fact that public safety and welfare are top concerns of friendly forces. This vital supply of information can also greatly reduce the widespread confusion that seems to permeate all phases of complex contingencies by keeping the populace informed of proper procedures, aid sources, expected behavior, and basically how to stay alive and out of trouble. The public is also made aware of the deliberate use of NLWs as an extension of lethal means.

This understanding may foster a sense of trust in U.S. forces and their desire to apply minimal, yet expandable force as they conduct their mission. Finally, embedded press agents may be used to increase the public's understanding of U.S. weapons and capabilities, including NLWs, and how they may be used to achieve the desired end state with less damage and fewer casualties.

Safeguarding the Force: The Operational Commander will be most effective if he uses NLWs to compliment lethal force while protecting his troops. Low cost NLWs are optimized for area denial and barrier containment, and when used synergistically with lethal weapons, serve as a vital part of a scalable response to attack. Again, through non-lethal information operations, civilians are made painfully aware of no trespassing areas and further, the wide variety of weapons, both lethal and non-lethal, at the operational commander's disposal. Lastly, U.S. forces are fully briefed on ROE, emphasizing minimum force required, yet soldiers are authorized full lethality in cases of self-defense or if convinced NLWs will have no impact on defusing a violent situation.

Adaptability: NLWs are central elements to the operational commander's degree of flexibility along the broad spectrum of mission types encountered daily in Operation APPROPRIATE FORCE. Moreover, as missions shift from noncombatant evacuation operations, to crowd control, to riot control for humanitarian relief, NLWs fill the critical gap along the force continuum and provide U.S. forces greatly increased options. Since convolution and ambiguity are the nature of this contingency operation, especially with Somalia's deep-rooted ethnic turmoil, NLWs give the operational commander an increased ability to adapt as his mission shifts in scope and objective.

Legitimacy: Non-lethal weapons, when used properly and in a timely manner, are key factors in gaining and maintaining legitimacy. As mentioned earlier, legitimacy is quite elusive, and in today's information revolution, extremely delicate. Embedded reporting plays a major part in legitimacy, as it provides an objective view of Operation APPROPRIATE FORCE that includes: the use of NLWs, lower levels of violence, peaceful intent, and the pronounced absence of military and civilian casualties. A more complicated threat to legitimacy is illegal application of non-lethal means. To help prevent legal tribulations concerning NLWs, the operational commander has promulgated clear, concise ROE, and has trained his troops extensively in their proper use. In the end, NLWs can do nothing to sway public opinion concerning the reasons *why* U.S. forces are fighting in Operation APPROPRIATE FORCE, but, their encouraging results can significantly influence support for *how* the operation is fought, providing yet another pillar for legitimacy.

PRINCIPLES OR FUNDAMENTALS: WHAT'S IN A NAME

A major portion of this research paper deals with evolving fundamentals of twenty-first century warfare, their origins in the principles of war, and the question of their relevancy on future battlefields. One can argue that the evolving fundamentals, with their increased breadth and depth, more appropriately address the ambiguity of twenty-first century warfare, where non-state actors will undoubtedly use their ability to blend in with the masses as a weapon. Similarly, these five aforementioned fundamentals seem to apply exceptionally well to the complexity and fluidity of twenty-first century mission areas. In today's multifaceted social and political climate, mission success will hinge upon

legitimacy and how the five fundamentals can help lead to a more acceptable and justifiable crisis or conflict resolution.

LETHAL AND NON-LETHAL WEAPONS: THE PERFECT FIT

It is fairly obvious that the facets and characteristics of warfare and crisis resolution in the twenty-first century differ greatly from the traditional conflict paradigm. Non-state actors and terrorist attacks on U.S. soil and the abundance of failed or failing states are forcing the United States to shift its warfare focus. Missions of the future, like non-combatant evacuation operations, MOOTW, and complex contingency operations will require constant attention and reevaluation with respect to tactics and weapons employment. It is clear that NLWs have a legitimate place on the battlefield, and there is renewed interest in accelerated development of NLW systems. As proof, the Department of Defense will spend \$271 million over the next six years for non-lethal weapons of interest that include: the Tactical Unmanned Ground Vehicle, and *Sheriff*, an area denial system based on microwaves—similar to a system currently being tested in Iraq.³⁷ Military planners should be warned, just as the Chechen Terrorist example illustrates, that NLWs are not stand-alone weapon systems to be used as battlefield cure-alls. Proponents of NLWs should promote realistic capabilities for these weapons, recognizing that NLWs are niche weapons and when properly integrated with lethal weapons, can fill the gap in the force continuum. Furthermore, operational commanders can help facilitate the seamless integration of NLWs and enhance the safety of subordinate military forces by ensuring the ROE applied to NLWs in any given situation are simple, current, and sensible. More importantly, planners at the strategic level should pay particular attention to resolving those

few remaining legal issues associated with existing and emerging non-lethal weapon systems.

BOTTOM LINE

The joint staff's evolving fundamentals apply exceedingly well to the battlespace and missions of the twenty-first century. Likewise, there is indeed a bright future for likely employment of non-lethal weapons as an augmenting force to lethal means. They are a fine complement to one another, and when used in a deliberate, well-planned, and synchronized fashion, NLWs represent an essential tool in the operational commander's toolbox.

NOTES

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⁴ Chairman Joint Chiefs of Staff, *Joint Doctrine for Military Operations Other Than War*, Joint Pub 3-07 (Washington, DC: 16 June 1995), viii-ix.

⁵ Lovelace and Metz, 7.

⁶ Chairman Joint Chiefs of Staff, *Doctrine for Joint Operations*, Joint Pub 3-0 (Washington, DC: 10 December 2001), A-1-A-2.

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⁸ Joint Staff, *An Evolving Joint Perspective: U.S. Joint Warfare and Crisis Resolution in the 21st Century* (Washington, DC: 28 January 2003), 45.

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²¹ John Alexander, *Winning the War* (New York: St. Martin Press 2003), 29.

²² "Seige Gas 'Was Morphine Spray,'" *CNN.COM* (29 October 2002). <<http://Archives.cnn.com/2002/world/Europe/10/29/Moscow.whichgas/>> [30 April 2005].

²³ Barry, Everett, and Peck, 13-14.

²⁴ *Ibid.*, 15.

²⁵ Lewer and Schofield, 68.

²⁶ U.S. Department of Defense, *Directive 3000.3*, 1-2.

²⁷ *Ibid.*, 2-3.

²⁸ Dennis Herbert, "Non-Lethal Weaponry: From Tactical to Strategic Applications," *Joint Force Quarterly* 22 (Spring 1999): 88. http://www.dtic.mil/doctrine/jel/jfq_Pubs/1621.pdf. Accessed: 28 March 2005.

²⁹ Lovelace and Metz, 30.

³⁰ Joint Staff, 14.

³¹ *Ibid.*, 46-47.

³² *Ibid.*, 52.

³³ *Ibid.*, 57-58.

³⁴ *Ibid.*, 53-54.

³⁵ Leonard G. Litton, "The Information-Based RMA and the Principles of War," *Air and Space Power Chronicles* (Maxwell AFB, AL: 6 September 2000), 8. <http://www.airpower.maxwell.af.mil/airchronicles/cc/Litton.html>. Accessed: 13 April 2005.

³⁶ Joint Staff, 55-56.

³⁷ Joshua Kucera, "US Speeds Development of Non-Lethal Weapons," *Janes Defense Weekly* (13 April 2005): 8. http://www4janes.com/subscribe/jdw/doc_view.jsp?K2DocKey+/content1/janesdata/mags/jdw/history/jdw2005/jdw10678.htm. Accessed: April 14, 2005.

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